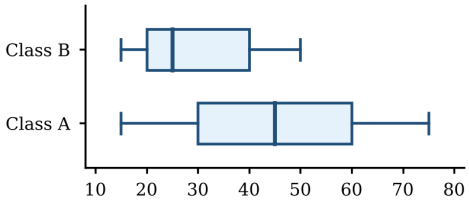
Day 202 **A Level Maths: B Tier 10-a-day**

1 The edge of a cube increases at 0.3 cm per second.
Find the rate of increase of (a) its volume, (b) its surface area, when the edge is 6 cm.

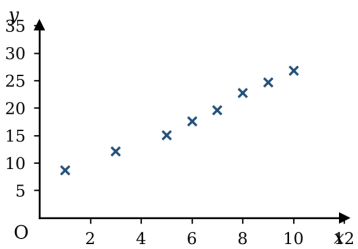
2 A lift of mass 200 kg is raised and lowered by a vertical cable. The lift accelerates upwards at 1 m s^{-2}.
Take g = 9.8 m s^{-2}.
Find the tension in the cable.

3 The box plots show the times taken (minutes) to complete a puzzle for two groups.
(a) Find the interquartile range of each group.
(b) Compare the two distributions.



4 Find the exact value of arcsin(sin $-\frac{\pi}{4}$).

5 The scatter diagram shows eight pairs of values of x and y.
(a) Describe the correlation.
(b) Why should y = 6 + 2x not be used for x = 20?



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6 Find the set of values of x for which $3x + 2 \geq 0$ and $x^2 - 9 \geq 0$.	
7 A particle P moves on a straight line from O. At time t s its velocity is $6t^2 - 42t + 72$ m s^{-1}. Find the first time P is at instantaneous rest, and its distance from O then.	
8 A sector of a circle has radius 6 cm and arc length 7.2 cm. Find (a) the angle of the sector in radians, (b) the area of the sector.	
9 $f(x) = \sqrt{-4x + 2} + 4$. (a) Find the largest possible domain of f. (b) Find the range of f.	
10 Express $\frac{2 + 4\sqrt{7}}{3 + \sqrt{7}}$ in the form $p + q\sqrt{7}$, where p and q are integers.	